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MAY 29 1937

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



May 29, 1937

First Miss America?

See Page 345

A SCIENCE SERVICE PUBLICATION

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The Weekly Summary of

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Edited by WATSON DAVIS

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DO YOU KNOW?

A frog can easily jump 20 times its length.

Egyptians pioneered in the construction of paved roads.

In many butterflies the first pair of legs are so short they are not used in walking.

In one of India's famous gold fields, 13,000 workers are employed underground daily.

Beaver dams were important and helpful in controlling erosion in this country, before man's arrival.

One fortress built by Crusaders in the twelfth century in Syria is so large that, within recent years, a village of about 500 people lived in it.

Although much older writings are known, only one clay tablet from Babylonia has been found that was written between 1800 and 1500 B.C.

The groundhog—or whistle pig—uses up about a third of its fat during the winter's sleep, needing the rest of its fat to "go on" when it comes out of hibernation, until nature provides its normal diet of growing things.

Bony amber may be as white as ivory.

Radio-equipped tractors have been placed on the market.

Many ancient Chinese jade objects are made of kinds of jade no longer obtainable.

In eighteenth century hospitals, mud and molasses were the staple foods for the sick.

Silver Spring, one of Florida's largest springs, yields enough water to supply a large city.

The Sierra Nevada "range" in California, according to most geologists, is one great mountain about 400 miles long and 50 miles wide.

Because there are 29 ways of spelling a name like Snyder, the Social Security Board has adopted a simple phonetic filing system to keep track of its records of 27 million persons.

Golden plovers, that fly over 2,500 miles from Labrador and Newfoundland to the tropics every year, are very fat birds when they leave the north, but the great effort of their flight leaves them thin when they arrive in the south.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

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ASTRONOMY

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PSYCHOLOGY

Why should convalescent children be gotten out of bed as soon as it is wise? p. 346.

PUBLIC HEALTH

Is refrigeration gas a hazard? p. 345.

Is there a great deal of danger from rabies in the United States? p. 344.

Where is tuberculosis most prevalent? p. 344.

AVIATION

Miniature Airplanes Now Fly Freely in New Test Tunnel

Ailerons and Rudders Are Controlled by Magnetic Fields Acting on Electro-Magnets Aboard Models

MINIATURE airplanes take off and maneuver for the sake of science in the world's first "free-flight" wind tunnel just demonstrated for the first time by the National Advisory Committee for Aeronautics at its laboratories at Langley Field, Va.

Instead of the small counterpart of a full-sized airplane being held conventionally in an experimental blast of air, the artificial breeze is increased until the model takes off by itself and flies freely. Then ailerons and rudder are controlled by magnetic fields acting on small electro-magnets in the model's wings. The scientist in charge maneuvers the test model plane just as a pilot handles a real one.

"We expect that this new method of studying airplane stability and control will give us much information directly that we have hitherto obtained theoretically or by empirical estimation," said Dr. George W. Lewis, N.A.C.A. director of research.

"Bumps" or gusts of wind are measured and studied by two new devices made by N.A.C.A. experts.

One of these is a bump recording instrument small enough to fit into the pocket. About 160 of these instruments are placed in airplanes and seaplanes of different types during actual flight. One of them has been carried by the China Clipper on round trips between San Francisco and Manila. From the curve traced by the instrument, engineers are able to reconstruct every roughness of the voyage and tell what stresses the craft withstood.

Gusts to Order

Gusts are made to order in a new tunnel and model airplanes are catapulted into them. As fast as an arrow is shot from a bow, the tiny plane is accelerated to 50 miles per hour in a few feet of travel. Hit by the gust, its action is recorded by a motion picture camera.

The famous N. A. C. A. cowling which streamlined air-cooled engines so effectively several years ago has been im-

proved and adapted to the 1500 horsepower engines developed in the past few years. There is an adjustable nose slot in the new cowling design so that the pilot can give the engine more cooling air while it is working hardest.

Reduce Power Needed

Just by reducing the size of rivets in an airplane wing by $1/32$ of an inch, it is possible to reduce the power necessary by 100 horsepower. This is one result of the experiments on the friction drag on the wings of large modern airplanes. In operating high-performance modern aircraft, the importance of smooth surface in a wing is so great that the N.A.C.A. experts suggest it may be found economical to have service crews wipe off accumulated dirt and dust on wing surfaces at every stop.

Large air transports leaving our airports in the future may be catapulted in order to assist their take-off and reduce the long run now necessary, if a suggestion of the N.A.C.A. is adopted. A catapult with half the acceleration of

gravity would reduce the take-off distance from 1800 feet to 1150 feet.

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AVIATION

Aerial Research Race On; U. S. Supremacy Menaced

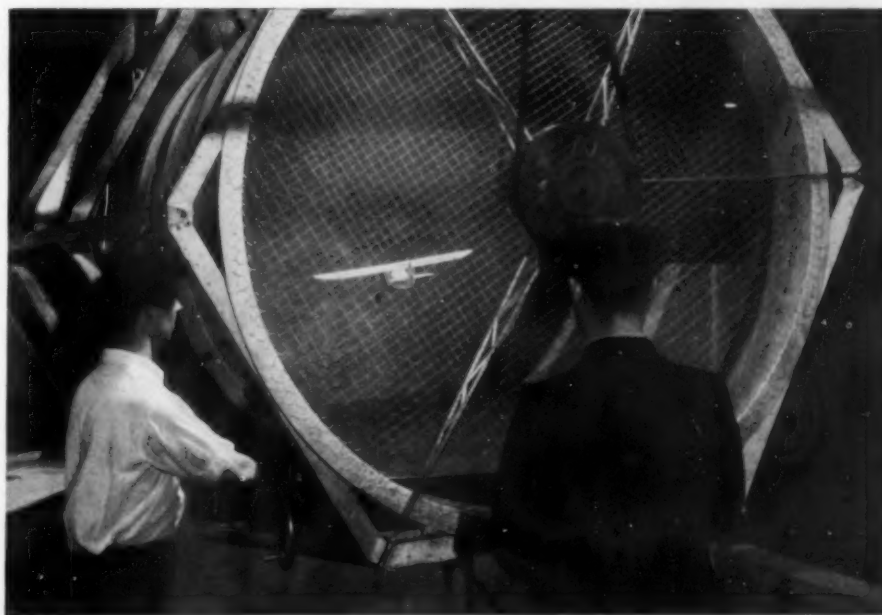
AVIATION today owes much to the men and apparatus in a group of buildings at Langley Field, Va. These laboratories of the National Advisory Committee for Aeronautics have changed the tempo and style of modern aeronautics.

Cruising speeds have jumped beyond 200 miles per hour, with greatly increased economy. Greater safety has been achieved, thanks to new methods of controlling aircraft. All because scientists have dreamed, tested and accomplished.

Manufacturers have learned to snatch eagerly the latest N.A.C.A. research findings. Next year's airplanes wear today's successful research results. Foreign war and commercial planes undergo metamorphosis as American advances become known.

Imitation is the most sincere flattery. But American aviation circles are a little disturbed over the large-scale duplication, with embellishments, of the N.A.C.A. laboratories by Germany, Italy and Russia. Millions of dollars are being spent on aeronautical research in those war-fearing countries.

Uncle Sam's researchers are pushing ahead on new developments: Learning



FLYING FREE IN WIND TUNNEL

more about airplane control by flying miniature planes freely in a special wind tunnel; creating artificial wind gusts and testing planes in them; improving the famous N.A.C.A. cowling to reduce wind resistance of new giant air-cooled engines; bettering seaplanes; experimenting with rotorplanes, etc.

The great international research race in aeronautics is getting closer. America has been way out in the lead. But our research, which always pays magnificent dividends, must be continued and expanded to keep up with the world procession.

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ASTRONOMY

New Equipment To Be Used On June Eclipse Expedition

Wide-Aperture Camera and Device for Distributing Light on Plates May Disclose New Facts on Corona

WHILE, in the main, scientific observations on the sun's corona have not changed markedly in the last twenty years, each new eclipse brings refinement of technique and some really new observing equipment. The eclipse of June 8 is no exception.

On the Peruvian coast, north of Chimbote, at an altitude of 3,000 feet a new device will be used for the first time in a total eclipse of the sun—the fast Schmidt type camera operated by Prof. Charles H. Smiley, director of Ladd Observatory of Brown University. This

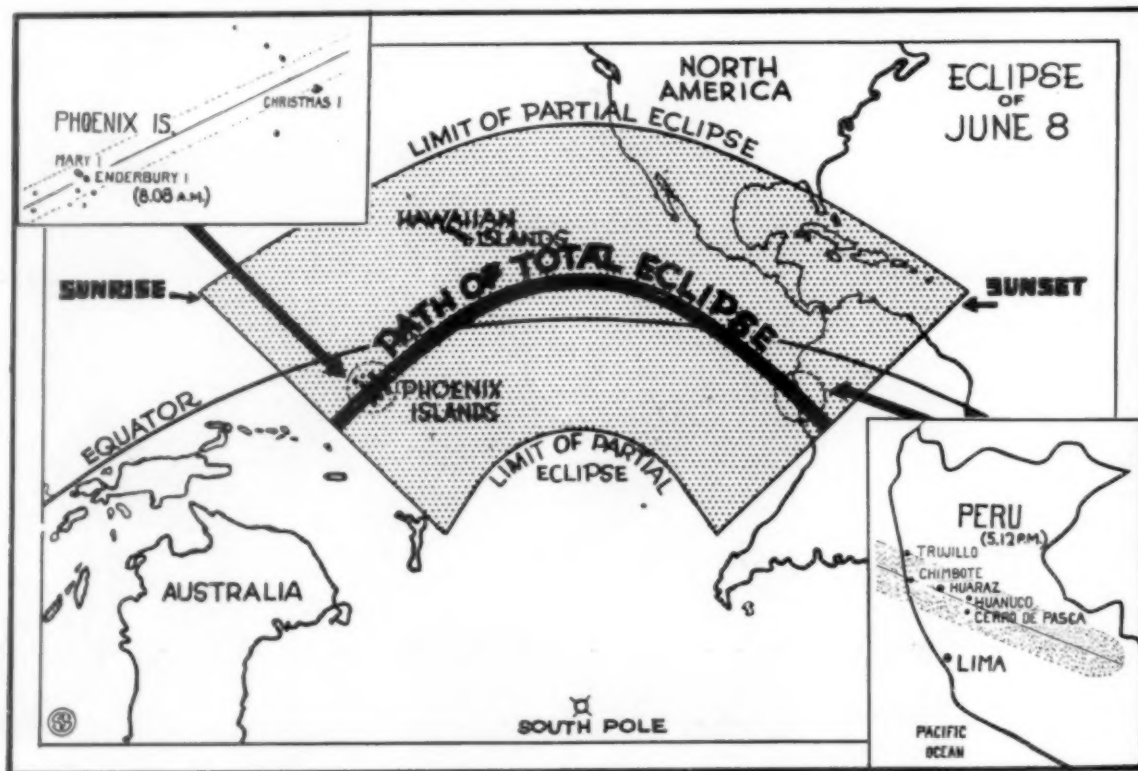
small camera will have an optical aperture of $f/1$, which means that the diameter of the light-collecting mirror of the instrument is equal to its focal length. The best of candid cameras, one can recall, are $f/2$ or $f/1.5$, while most telescope cameras are $f/10$ or more. The lower the aperture the greater the light-gathering power of the instrument and the shorter may be the exposure time. Prof. Smiley's Schmidt camera can scan the sky through 20 astronomical degrees, while the ordinary reflector camera can picture only about one degree. The fast

light-gathering camera should be useful in recording the relatively poor lighting conditions that will prevail in Peru.

For Corona Pictures

The U. S. Navy-National Geographic Society expedition—perhaps the most pretentious of all American parties which will take the field—will employ a new device developed by Dr. Irvine Gardner of the National Bureau of Standards in Washington that should obtain better pictures of the far-flung, but faint, streamers which blaze out hundreds of thousands of miles into space from the shining corona of the sun.

Dr. Gardner's device is a rotating disk with four sections cut out of it like pieces of pie. This disk spins 100 times a minute in front of his telescopic camera. The amount of light reaching the photographic plates depends on the openings in the disk. Out near the rim the openings are large and nearly all the light will come through. Nearer the center, more and more light is cut off. The object of the device is to secure about equal light from the brilliantly bright part of the corona near the sun's surface and from the very faint outer portions of the corona. Photographs of the corona, in the past, have sometimes been overexposed by the brilliant inner corona before sufficient light from the outer co- (Turn to page 342)



ASTRONOMY

June Brings Rare Eclipse

Longest Eclipse Seen in Twelve Centuries Occurs On June 8; Visible From Parts of Pacific Ocean

By JAMES STOKLEY

TWICE a year, at least, the moon passes completely or partly in front of the sun, and produces an eclipse of that body. Said another way, the moon's shadow then sweeps across the earth. The shadow consists of two parts. The inner part, called the umbra, tapers to a point and is about 232,000 miles long. In this the moon completely hides the sun. But around the umbra is an outer part, the penumbra, where the sun is only partly hidden.

Because the average distance of the earth from the moon is about 240,000 miles, on the occasions when the moon comes between the sun and earth, the shadow fails to reach the surface. Then the moon appears a little smaller than the sun, and even though it is seen directly in front of the sun, there is a ring of sunlight visible around it. This is an annular eclipse (from the Latin word *annulus*, meaning "a ring"), and is not of great scientific importance.

But sometimes the shadow reaches the earth. The nearer the moon, compared with the sun, the farther it reaches, and the larger is the shadow itself as cast upon the earth's surface. When everything is just right—when the eclipse occurs when the moon is nearest the earth and the sun farthest away, and when the shadow goes across the equator—it is possible for the shadow to be about 167 miles in diameter.

Path of Totality

However, the earth is turning, and the moon is moving around the earth, so the shadow does not "stay put." It sweeps across land and sea, tracing a "path of totality." Obviously, the larger the shadow, the longer it takes to pass a given point. It travels faster in some places than others. When it first touches the world, or when it leaves, its axis is almost tangent to the globe, and its motion is most rapid, as much as 5000 miles an hour.

But if it passes at a place where the sun and moon are overhead, which would be near the equator, the speed is much slower, only 1060 miles an hour.

Considering all these things, the longest that it is possible to see the sun covered from one place is 7 minutes and 40 seconds.

Probably never in the millions of years since the earth was born has a 7 minute and 40 second eclipse occurred. Not since 1803 has there been one lasting as much as seven minutes. Not in the past twelve centuries has there been one as long as seven minutes and four seconds. Yet that is the length of the one visible from parts of the Pacific Ocean on Tuesday, June 8. Here, surely, is the chance of a millennium to study the many phenomena of a total eclipse which are so important to astronomers.

Longest Over Water

It would be, but for one thing. The greater part of the path, and all the part where the sun is in the best position and the duration longest, is over the water. Only in two areas, near the ends of the path, is there land upon which the necessary instruments can be erected with the necessary stability. At the western end, the shadow crosses some of the Phoenix Islands, British possessions. Two of them are considered possible.

One is Enderbury, about two and a half miles long and a mile wide, 30 feet high, uninhabited, with no fresh water, no anchorage and a difficult landing. The other is Canton Island, a coral

atoll 10 to 12 feet high, nine miles long and four miles wide. It has a spacious lagoon, with anchorage in 10 fathoms, so that is better for landing apparatus. Cocoanuts have been planted on the island, and there are a few people.

Canton would seem to be preferable, but it is a little farther from the center of the path, and totality lasts only 3 minutes 45 seconds, as compared with 4 minutes 8 seconds for Enderbury. The total eclipse occurs at each about 7:07 a. m. local time, or 2:07 p. m. Eastern Standard Time, with the sun not yet high in the eastern sky, only about 23 degrees above the horizon.

Best Available

Despite their disadvantages, these two islands are the best available, and, after all, even 3 minutes and 45 seconds is longer than the average length of a total eclipse. A group from New Zealand, with the cooperation of their Navy, is to make observations from Canton. Also an American group, representing the U. S. Naval Observatory, the National Bureau of Standards and the National Geographic Society, with personnel recruited from several other institutions as well, have journeyed to Canton, traveling from Honolulu in the Navy minesweeper "Avocet."

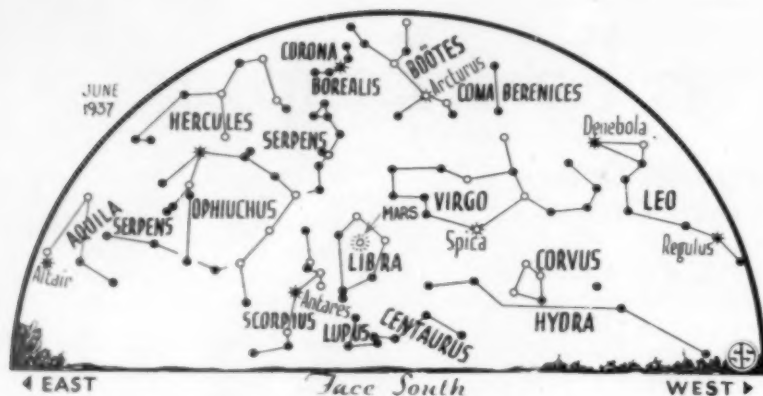
The other possible observing area is the coast of Peru. This is considerably more accessible than the Phoenix Islands, because commercial steamers run there regularly, but, astronomically, con-

☆ * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



DIPPER IN NORTH

usually



MARS SHINES IN SOUTH

ditions are much worse. There the total eclipse happens at 5:25 p. m. Eastern Standard Time. This is also, approximately, the Peruvian local time, because the western coast of South America is directly south of the eastern United States. At the time of the eclipse it is about 45 minutes before sunset, the sun is only 8 degrees above the western horizon, and totality lasts 3 minutes and 20 seconds.

Peru will be the scene of at least two parties. One is Japanese, from the Kwasan Observatory at Kyoto. The other will represent the Hayden Planetarium, New York City. The University of San Marcos, the oldest in the western hemisphere, is cooperating with the visitors.

At both locations the observations will be of the same sort.

Though the eclipse overshadows other astronomical events of the month, there is another that is welcome. This happens on June 21. On that date, at 3:12 p. m. Eastern Standard Time, the sun reaches its farthest north position in the sky, and this is the summer solstice, the beginning of summer. This day is the longest of the year.

Vega Brightest

On the evenings of June the brightest star visible appears high in the east. This is Vega, of Lyra, the lyre. But this June it is not the brightest sky object. The moon and two planets, now visible, exceed it in splendor. One, shown on the accompanying maps (in which the skies are depicted for 10:00 p. m., standard time, at the beginning of the month, 9:00 p. m. in the middle, and 8 p. m. at the end) is Mars, in the group of Libra, the scales, in the south. Just to the left is Scorpius, the scorpion, with the red star Antares.

The name, by the way, means "rival

of Mars," applied no doubt because of its color. This month we have a good chance to compare them and we find that it is a rather feeble rival, as far as brilliance is concerned.

The other planet of the June evenings is Jupiter, which appears to the southeast about 10:30 p. m., standard time, and is even brighter than Mars. It is in the constellation of Sagittarius, the archer, to the left of the scorpion, and it is not shown on the maps.

Look for Pointers

To locate other bright stars of the June sky, one might start with the great dipper, high in the north. The two lower stars in the bowl are the famous pointers, indicating the direction of the pole-star. The curved handle is also a guide post. If we follow its curve to the south, we come first to Arcturus, in Boötes, the bear driver, and then to Spica, in Virgo, the Virgin.

Descending in the west is Leo, the lion, with the star Regulus at the end of the handle (to the south) of a subgroup called the sickle. Near the horizon, in the northwest, are Castor and Pollux, of Gemini, the twins, and still lower, and farther north, is Capella, in Auriga, the charioteer. However, this is so near the horizon, that it is very difficult to see during the month.

Below Vega, to the east, is the northern cross, of Cygnus, the swan. Deneb is the brightest star, at the top of the cross, which is on its side. Altair, in Aquila, the eagle, is a neighbor, to the right.

Phases of the Moon

		E. S. T.
Last Quarter.....	June 2	12:24 a. m.
New Moon	8	3:43 p. m.
First Quarter	15	2:03 p. m.
Full Moon	23	6.00 p. m.

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rona was obtained. As a result scientists exposed for the bright light and let the faint part fade out into nothingness. Naturally they have always wondered about the knowledge that might be gained from the faint, lost part.

Also on the coast hills and mountains of Peru will be the Hayden Planetarium Graec Expedition from the American Museum of Natural History in New York City. Members of this party include: Dr. Clyde Fisher of the Planetarium as leader; Charles H. Coles, Dorothy A. Bennett; Prof. William H. Barton, Jr., Capt. A. W. Stevens, Dr. S. A. Korff, and Hans Christian Adamson.

In the South Seas expedition to the islands of the Phoenix group will be: Dr. S. A. Mitchell, director of Leander McCormick Observatory, University of Virginia, as leader; Capt. J. F. Hellweg, superintendent of the U. S. Naval Observatory; Dr. Paul A. McNally, director of Georgetown College Observatory; Dr. Floyd K. Richtmyer of Cornell University; Dr. Irvine C. Gardner, National Bureau of Standards; Dr. Theodore Dunham, Mt. Wilson Observatory; John W. Willis, U. S. Naval Observatory; Richard H. Stewart, National Geographic Society, Charles G. Thompson, Foundation for Astrophysical Research, and Charles Bittinger, Washington artist.

Broadcast

A world-wide broadcast will be made from the scene of the eclipse with George Hicks as announcer and Walter R. Brown and Marvin S. Adams, field engineers for the National Broadcasting Company. The Columbia Broadcasting System has prepared facilities to cover the event from Peru where Capt. Albert S. Stevens will describe his plans to make photographs from an airplane.

Because of the rarity of eclipses, and their brief duration, an astronomer who observed all the eclipses of his lifetime would see the corona for less than an hour, so even a few minutes more will add materially to the time during which it has been observed. Full knowledge of the sun is desirable not only because of its importance to us, but also because the sun is the only star which we can see in detail. What we learn of it helps us better to understand the more distant celestial bodies.

The coronal observations are by direct photography, with large cameras, and with the spectroscope, which analyzes its light. Other spectroscopic observations are of the chromosphere, the

outer layer of the sun's globe. Just before, and just after, the moon covers the solar disc, the chromosphere shines by its own light, unmixed with that from the interior, and then important observations can be made of the distribution of gases in the sun's atmosphere.

Motion Pictures

At both of the eclipse locations motion pictures will be made to record the changing effects as the partial phases, and the total eclipse, take place. Also, at each, an artist will paint a portrait of the eclipse during the fleeting moments of totality. Charles Bittinger, painter of scientific subjects, of Washington, D. C., is with the South Seas party, while D. Owen Stephens, of Swarthmore, Pa., is in Peru.

Even though shipboard observations are very much restricted it was felt by many that some astronomers should be as close to the middle of the path as possible. Early efforts to charter a ship, on which to take an eclipse cruise with passengers who wanted to see the spectacle, were unsuccessful because of the expense. However, there are some freighters, plying between Hawaii and Panama, which could go through the center

of the eclipse track by taking an alternative southern route.

One of these will carry Dr. John Q. Stewart, of Princeton University, and James Stokley, representing The Franklin Institute and the Cook Observatory,



MAKING SCHMIDT CAMERA

Prof. Charles H. Smiley, of Brown University's Ladd Observatory, is here directing the grinding of the $f/1$ lens for the Schmidt type camera with which he hopes to obtain eclipse photographs of new usefulness to science. With him is shown his assistant, Donald S. Reed.

The Eclipse on the Radio

May 29, 5:45 p. m., E.S.T., Dr. Clyde Fisher, Hayden Planetarium, speaking on the ancient superstitions of the sun-worshipping Peruvians. (Columbia Broadcasting System).

May 30, 9:00 p. m., E.S.T., Broadcast from Canton Island. (National Broadcasting Company Blue Network).

June 1, 9:00 p. m., E.S.T., Entertainment from New York and Washington for expeditions (NBC Blue).

June 3, 5:00 p. m., E.S.T., Capt. Albert Stevens outlines plans for photographing the eclipse from airplane at 30,000 feet altitude. (Peru, CBS)

June 7, 5:00 p. m., E.S.T., Preview of last-minute technical preparations. (Peru, CBS)

June 7, 6:45 p. m., E.S.T., Description of last-minute preparations from Canton Island. (NBC Blue).

June 8, 12 noon, E.S.T., Early stages of eclipse from Canton Island. (NBC Blue).

June 8, 5:00 p. m., E.S.T., Description of eclipse. (Peru, CBS)

June 8, 2:00 p. m., E.S.T., Totality described from Canton Island. (NBC Blue).

June 8, 9:45 p. m., E.S.T., Scientists at Canton Island will speak of results of observations. (NBC Red).

of Wynnewood, Pa. They expect to make visual observations of the corona, measurements of its brightness and also photographs. The latter, however, will have to be of short exposure, because of the motion of the ship. Should the expeditions in Peru and the Phoenix Islands be unsuccessful these might be the only records of the appearance of this eclipse.

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ENGINEERING

New Turbine Pumps Rescue Water-Flooded Coal Mines

BITUMINOUS coal mines that have long been flooded with water are being rescued by the use of deep well turbine pumps.

A. B. Kelly of Greenburg, Pa., reported to the American Mining Congress the first successful freeing of an abandoned coal field by this method. In 46 days, the turbines caused 2,500,000 tons of water to gush out of Westmoreland County, Pa., flooded mines. This was 53,800 tons a day or 37.5 tons per minute. Similar pumps are about to raise 4,000,000,000 gallons (some 16,000,000 tons) of water from a maximum depth of 450 feet in a Fayette County, Pa., submerged field.

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The London Zoo has a new feature—a studio of animal art, where about 25 art students can sketch wild animals brought to “pose” in a special cage before them.

PUBLIC HEALTH

Rabies Menace Increases; Medical Men Urge Action

A QUICKER and more positive test for rabies and a less cumbersome method of vaccination must be found, declares the *Journal of the American Medical Association* in its leading editorial of the week. (May 22)

Last year's alarming situation in regard to dog-bites and rabies appears even more menacing this year, the medical journal asserts.

More than 100 persons have been bitten by dogs daily in Chicago alone in recent warm days, a 50 per cent. increase over the number of bites during the similar period of 1936.

"Immediate and coordinated action is necessary," the Journal states. "Rabies is a disease in which individual efforts are relatively helpless unless aided by the full machinery of social organization."

"The press, public health officials, the police and physicians—in both their individual and their official capacities—should take steps to combat this threatening situation at once if a considerable number of unnecessary deaths is to be avoided."

"In the face of the now existing information as to the frequency and rapid spread of rabies among animals, it seems criminal to postpone action until the disease is identified in human beings."

"Because rabies is primarily a disease of dogs, it seems likely that this campaign will have the whole-hearted support of all the animal humane societies."

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PUBLIC HEALTH

TB More Prevalent Among College Men Than Co-Eds

TUBERCULOSIS is more prevalent among college men than among college women.

It occurs more frequently among college students in the East and Far West than in the Middle West.

Dr. Esmond R. Long and Florence D. Seibert of the Henry Phipps Institute, University of Pennsylvania, report the results of the tuberculin test on 18,744 college freshmen in 1935-36, (*Journal, American Medical Association*, May 22).

Accurately completed tuberculin tests were given to new entrants at 20 colleges.

From 40 to 60 per cent. of students

showed tuberculous infection in the Eastern and Far Western colleges, and from 20 to 30 per cent. showed infection in the Central States.

Since the majority of students were residents of the general region of their college, Dr. Long and Miss Seibert believe they reflect the incidence of tuberculous infection in the population of these regions.

The high rates in New Mexico and Southern California colleges may be explained by the fact that these regions are noted as resorts for the tuberculous.

Denser populations in the East imposing more frequent contact and in the long run more exposure are thought to account for the high rate in the East.

In rural Idaho almost no students react to tuberculin, while in the mining districts of Southern Idaho there are many positive reactors.

Dr. Long states that the tuberculosis death rate is higher among young women than among young men.

While the home contacts with tuberculosis of the two sexes are approximately the same, boys are less restricted in their contacts outside the home and this probably accounts for the greater incidence of the disease among college men.

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GEOPHYSICS

New Research Ship Will Continue Magnetic Survey

TRIBUTE to the foresightedness of the British Admiralty in building a new non-magnetic ship with which world-wide measurements of the earth's magnetism can be undertaken, was paid by Dr. John A. Fleming, director of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington.

He announced that the new vessel, to be known as the S. S. Research, will carry on the work performed for twenty years by the S. S. Carnegie of the American institution. The Carnegie was destroyed by an explosion in the South Seas in November, 1929, when it had nearly completed a 20-year research program of investigating the secular changes in magnetism which make possible the correction of mariners' charts for compass variations throughout the world. The Research, it is planned, will fill in the gaps left in the Carnegie's program.

Science News Letter, May 29, 1937

IN SCIENCE

ORNITHOLOGY

America's Largest Bird Not in Danger of Extinction

AMERICA'S largest bird, the California condor, is not in as immediate danger of extinction as has been thought, in the opinion of Arthur Cleveland Bent, noted ornithologist of Taunton, Mass. Mr. Bent tells the life histories of this and other North American birds of prey in a new publication of the U. S. National Museum.

The California condor lives in mountain fastnesses so remote from the destructive influences of civilization that it may long continue to exist. There is no doubt, however, that its range, and therefore probably its numbers, have been considerably reduced. It used to be seen northward to the mouth of the Columbia river and eastward into Nevada and New Mexico. Now it is found only in southern California, with a slight eastern extension across the boundary, and in the northern part of Lower California.

The only effective enemy the California condor has ever had is man, states Mr. Bent. In gold-rush days, miners used to shoot them for their big, hollow quills, which were excellent containers for gold dust. Far larger numbers were killed for no reason at all except the "fun" of shooting something. Now, however, there is a state law protecting them, which seems to have the support of public opinion. They are occasionally still killed, however, when they eat poisoned carcasses that have been set out for coyotes or other predatory mammals.

From his own observations and the records of fellow-ornithologists Mr. Bent makes out a very good case for the California condors, considering the fact that they are carrion-eaters, being in fact giant vultures. They keep their nesting sites clean, and are very fond of bathing in running water.

Like many other birds and mammals, the condors are fond of play. Mated birds display much affection, and spend a good deal of time nibbling at each other and in other kinds of lovemaking.

Science News Letter, May 29, 1937

THE FIELDS

ANTHROPOLOGY

Age of "Minnesota Girl" Is Mystery to Scientists

See Front Cover

WAS the comely maiden pictured on the cover of this week's SCIENCE NEWS LETTER the first Miss America?

Archaeologists are engaged in discussion over the age of this mysterious young lady known to scientists as "Minnesota Girl." She is 20,000 years old, says Prof. A. E. Jenks, of the University of Minnesota, under whose direction the portrayal of the cover illustration was constructed.

Some other anthropologists say her skeleton, found in an ancient Minnesota lake bed, is not different from those of the Sioux Indians who fought the white man. The shell do-dad was found with her skull.

Science News Letter, May 29, 1937

PUBLIC HEALTH

Warns Refrigeration Gas Is Still Health Hazard

REPORT of two new cases of poisoning by a refrigeration gas (methyl chloride) shows that this cooling agent is still a health hazard.

Back in 1929 ten deaths resulting from leaks in the refrigeration system in Chicago apartment houses led to an investigation by a committee of the American Medical Association.

This committee criticized all commonly used refrigerants, recommended the speedy development of a nontoxic gas and urged the adoption of a national code of supervision for refrigeration plants.

That the ideal refrigerant has not been discovered is apparent, declares Dr. Albert Weinstein of Nashville, Tenn. It is he who reports the two new cases of methyl chloride poisoning in the *Journal of the American Medical Association*, (May 8).

These cases indicate that supervision of installation and operation of refrigerating plants is not universally practiced, Dr. Weinstein charges.

"There is nothing to indicate that

state or federal health agencies have attacked this important industrial and domestic health hazard," he declares.

Recently a nontoxic refrigerant, dichlorodifluoromethane, has been developed, but Dr. Weinstein has been unable to discover the extent of its use.

Certain manufacturers have added small amounts of irritating gases to refrigerants employed by them, so that those exposed are warned of danger. Such warning agents, however, are of little value in saving the lives of infants, invalids, the insane or the drunk.

The cases reported in the medical journal occurred in two men who were repairing an air conditioning plant in the basement of a business concern.

The older man's head began to ache and he felt dizzy so he quit work after two hours. The younger man continued for two hours before he was too ill.

The first man was ill for several days. The second man was desperately sick and screamed in pain. After eight days of treatment he could leave his bed.

Science News Letter, May 29, 1937

ASTRONOMY

Find 12 "Forbidden" Lines Of Iron Spectrum on Star

AN EVEN dozen new spectral lines of the element iron which have not yet been obtained in the scientific laboratories of the earthbound scientists have been discovered in the light from the variable star known as R. Hydrae, it is announced by Dr. Paul W. Merrill of Mt. Wilson Observatory of the Carnegie Institution of Washington. Dr. Merrill's report was presented at the Syracuse, N. Y., meeting of the American Association of Variable Star Observers.

The new spectral lines are known as "forbidden" lines to scientists. The positions of the observed lines can be calculated on the basis of the supposed structure of the iron atom. Asked how astronomers can accept the assurance that the lines really come from iron Dr. Merrill said:

"Suppose you discover lying in the street a pile of small boards of odd shapes. Taking them into a nearby house, you find that every one fits snugly into a hole in the floor, and that no holes are left over. You would conclude that you knew where the boards came from." In the same way the new found spectral lines fit into the positions predicted by the theory of the iron atom's structure.

Science News Letter, May 29, 1937

CHEMISTRY

Catalase, Mystery Stuff Of Cells, Is Crystallized

CATALASE, a "mystery" stuff apparently present in all living cells yet whose use in life is not known, has been obtained in pure crystalline form for the first time by Drs. James B. Sumner and Alexander L. Dounce of Cornell University. Announcement of their achievement, which should make much easier future research on this difficult substance, is in *Science* (April 9).

Catalase belongs to the group of complex organic substances called enzymes. Enzymes promote certain specific chemical reactions within the body. Common enzymic reactions are the digestion of proteins by pepsin, the changing of starch to sugar by the enzyme amylase. But about all you will find in the books about catalase is that it breaks hydrogen peroxide apart into oxygen and water; and that hasn't any apparent connection with its job in living cells, where there isn't any hydrogen peroxide. It has been suggested that catalase has something to do with the use of oxygen in the life processes, but nobody knows just what.

Drs. Sumner and Dounce obtained their catalase crystals from chopped liver. After a train of extraction and purification processes, they had a small mass of platelike crystals of microscopic size. These formed very rapidly.

Little has been determined as yet about their physical and chemical properties. Spectroscopic tests show that they absorb light most at certain wavelengths in the red and green portions of sunlight.

Crystalline catalase coagulates upon heating and gives many of the usual protein reactions to appropriate chemical tests. A strong odor of burnt hair is produced when the crystals are burned; this also is a characteristic of proteins.

One interesting and possibly significant fact is that the crystals contain iron, in concentration approximately one-tenth of one per cent. The oxygen-carrying respiration enzyme of the blood discovered by the noted German chemist Prof. Otto Warburg about a decade ago is also believed to contain iron. Further research will disclose what relationship may exist between catalase and the respiration enzyme and catalase.

Dr. Sumner pioneered in the field of obtaining enzymes in pure crystalline form. The first enzyme so obtained, urease, was prepared by him in 1926.

Science News Letter, May 29, 1937



SELF-TORTURE

This little girl is biting her lips. Such mild forms of self-hurting are common to many adults. They may start when a restless child is confined during convalescence or punishment. Sometimes they grow to abnormal extremes.

PSYCHOLOGY

Self-Torture, Normal in Children, May Become Habit

Confinement of Restless Youngsters in Convalescence May Start Nail Biting or Other Nervous Tricks

LITTLE Johnny was complaining about a sore thumb.

"It hurts every time I pinch it!"

"Then why do you keep on pinching it?" asked Mother.

Johnny didn't know why, but a psychologist could tell him that he was just following out a natural craving all humans seem to have for punishment and suffering.

A great deal of the pain and anguish that men and women must endure during their lives is self-inflicted. Extremes of self-torture are seen among the mentally ill, but in its milder forms nearly everyone is a victim—or a culprit.

Do you think you are immune? Well, don't be too sure. Just look over this list of ways of self-punishment and see

whether you are not among the guilty concerning some of them.

Biting the lips. Biting the nails or the skin fold around them. Rubbing an injured place. Pulling at the hair. Picking or rubbing rough or raised places on the skin, sores, or skin eruptions. Working with the tongue on a loose or aching tooth. Banging your fist or even your head. Working when you are tired. Destroying on impulse your treasured possessions.

A search into the reasons underlying these and the many other forms of mild self-torture has just been published in this country by the scientific publication *Genetic Psychology Monographs*. (Feb. 1937). The study was made in Poland by Dr. Casimir Dabrowski, of

the Department of Public Health, Warsaw, who was Polish Research Fellow of the Rockefeller Foundation at Harvard a few years ago. His report has been translated by Dr. William Thau.

Children are chief offenders among the hurters of self. It often seems to frantic mothers that their small sons are bent on self-destruction. Dr. Dabrowski finds there is really something to the idea. At least children will deliberately hurt themselves from sheer joy in the interesting results—the thrill of the sensation or the rumpus it stirs up.

Nervousness Possible Cause

Much of the self-punishment is due to nervousness or hyper-excitability, Dr. Dabrowski says. Just watch a nervous man who is engrossed in reading or in thought over a problem, particularly a problem which is unpleasant. See him fidget. He may wind his watch chain around his finger so tightly it creases the flesh. If he is old-fashioned enough to have a long mustache he may chew or pull on the ends of it. Perhaps that is why the modern young man clips his so close. But for him are left the eyebrows to pluck, ear lobes to pull. He may scratch his head or face. He may tear paper, possibly important papers. He may scribble over a favorite book. Or whittle initials in his desk.

These little tricks represent a sort of overflowing of muscular energy during the time when the individual is compelling himself to sit still and work. Children and young people have more urge for activity than do adults. For that reason, this sort of restless, useless activity is more common among the youngsters.

May Become Habit

Once started, such things become a compelling habit in much the same way that smoking and drinking may. The origin of the nervous habits may often be traced to a period of convalescence when the child is restless and needs activity yet must remain confined to bed.

Get him out of bed as soon as you can, is Dr. Dabrowski's prescription. And while he is there, try to find useful activity for his hands that will busy them and yet not tire him unduly.

Grief or humiliation may cause a person to torture himself, Dr. Dabrowski points out. Somehow mental anguish is alleviated by the pricks of physical pain. Since before the memory of man, those who were in grief have fasted, thrown their bodies on the hard ground, beat

upon their breasts and, figuratively or literally, put ashes upon their heads.

What is crying but a form of self-torture and self-mutilation?

"Rebound" Marriage

A "marriage on the rebound" of a person who has been jilted may be a mental parallel of such physical self-punishment in grief. Dr. Dabrowski tells of an 18-year-old girl who found that the boy she loved had deceived her. Within a few hours after hearing this, she gave herself to the least acceptable and even physically repulsive of her suitors in a sort of self-revenge.

Dramatization and a need for the spotlight may be another explanation for self-torturers.

Here is the usual motive behind the child who puts on temper tantrums. When a youngster chooses a public place or an embarrassing moment to throw himself on the floor, kick and scream, or hold his breath until he becomes actually blue in the face, his eyes pop out and his life seems in danger, you may suspect a desire for the spotlight. He may have a feeling of inferiority and takes this way to gain attention.

Children have been known to bring on nose bleeds, make themselves sick, and feign convulsions because they enjoy the excitement and commotion in the household which such behavior produces, Dr. Dabrowski found.

Asceticism

A higher motive for self-torture is found in asceticism which is known among all peoples, primitive and civilized. Certain forms of deprivation and self-sacrifice are essential to the building up of character and the manly virtues, is the belief underlying religious fasting, humiliations, prohibition of certain pleasures at certain times.

The Catholic girl who gives up candy during Lent, or the Methodist boy who refrains from card-playing or the Dunker who dons plain clothing is acting upon the same general motive as that activating the Hindu who lies on a bed of spikes.

Carried to extremes such forms of religious self-torture produce a sort of ecstasy that seems to lift the convert from the commonplaces of ordinary existence.

Michelangelo, Dostoyevsky, and Tolstoy are among a number of geniuses described by Dr. Dabrowski as practicing self-torture in connection with their art.

Michelangelo suffered an intense feeling of inferiority. He was not good looking. His body was poorly proportioned, and what facial beauty he might have had was destroyed by a broken nose. That to a person in whom love of the beautiful amounted to a passion, was tragedy. He abused his health and especially in his later years he endured hunger, terrible hours of work, and privation. And when he had finished a masterpiece he would ruthlessly destroy it unless it were taken from him by force.

Dostoyevsky's and Tolstoy's tales of suffering reflect the torture that they themselves endured in their pursuit of mental self-punishment.

Has Served Society

Thus, this universal craving for discomfort and pain, which seem so useless and harmful when it takes its ordinary outlets of nail biting and lip chewing may be turned to very noble purposes and serve society in outstanding ways.

PSYCHIATRY

Insulin Cuts Short Circuits In Brain of Mental Patient

INSULIN shock treatment is banishing hallucinations and clearing up befogged minds of mentally sick patients by isolating short circuits in the brain which are responsible for the mental confusion, Dr. Manfred Sakel, Viennese psychiatrist who discovered the new treatment, explained to members of the American Psychiatric Association meeting at Pittsburgh.

The particular mental disorder for which Dr. Sakel introduced insulin shock treatment is schizophrenia, also known as dementia precox. Psychiatrists estimate that 100,000 persons suffer from the disease in the United States alone.

The insulin shock treatment also works on narcotic addicts, aiding in the difficult process of weaning the addicts away from the drug they love. Instead of being morose and mentally disturbed after the drug is taken away they become extremely friendly and interested in the world around them. The new treatment was first discovered by accident during treatment of a drug addict who had diabetes. Insulin, a gland extract, has been the standard treatment for diabetes for over a decade.

"A feeling of inferiority may be an incentive to put forth one's best efforts, and perhaps no great accomplishment has ever been attained except under the spur of some such stimulus," said the psychiatrist Dr. C. Macfie Campbell, who is quoted by Dr. Dabrowski.

If you must suffer, let your suffering be to some good purpose, urges Dr. Dabrowski as the result of this study. "Severity to oneself should be accompanied by sensitivity to the sufferings of others," he says.

The forgetfulness of self that makes a man dive into icy waters to save a companion from drowning, that kept the commander of the Hindenburg persistently at his post until he was forcibly dragged out of the flaming wreckage, and that enabled other men to jump into that inferno for rescue work, is a result of training in submitting the natural instincts to authority of the intellect and moral principles in order to reach a high degree of self-control.

Science News Letter, May 20, 1937

Giving insulin, the diabetes remedy, to the schizophrenic patients in doses large enough to reduce the amount of blood sugar almost to the point of collapse, banishes the hallucinations and restores their sanity. Dr. Sakel reported that this treatment had succeeded in bringing 80 per cent. of the patients back to a normal mental state.

The mystery of how insulin shock treatment accomplishes this was explained by Dr. Sakel on the basis of a new theory of the cause of the disease.

Stimuli coming to the brain from sense organs, such as the eyes and ears, probably travel along pathways from one brain cell to another, Dr. Sakel suggested. Injury at any point may distort and confuse the pathways. Then the stimulus, coming from eye or ear or other sense organ, loses its way or is short-circuited.

When the stimulus comes in over the short circuit or false pathway, the brain's response may consequently be false. This would explain the hallucinations of the mental disease. A stimulus that should have come, say, over the pathways from the eye got short-circuited along the way

● RADIO

June 1, 4:15 p. m., E.S.T.
SEA SERPENTS AGAIN—Dr. Paul Bartsch
of the U. S. National Museum.

June 8, 4:15 p. m., E.S.T.
SCIENCE DIGS A MINE—Charles F. Jackson
of the U. S. Bureau of Mines.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

and arrived on the pathway from the ear. The thinking part of the brain received it as an ear stimulus and the patient heard voices that did not exist.

When the blood sugar is lowered by insulin, the false new pathways or short circuits are isolated, Dr. Sakel believes. This banishes the hallucinations.

Because the false pathways are the most recently formed ones, they are most easily isolated. When the false pathways have been in existence for a long time, as in mental cases of long standing, it may not be possible to isolate them. This probably explains why the insulin treatment is more effective in acute, newly-developed cases of schizophrenia than chronic ones and in young rather than old patients.

Science News Letter, May 29, 1937

PHYSICS

Attempt to Split Neutron A Failure at Cavendish

THE neutron has not yet been disintegrated. This subatomic particle, one of those unknown until recent years, can not be split into electron and proton, older building blocks of the universe.

A scientific trio from famous Cambridge's famous Cavendish Laboratory, consisting of C. W. Gilbert, C. L. Smith, J. H. Fremlin, attempted to confirm a report from Japan that the neutron could be broken up. They bombarded it vigorously with the hearts or cores of heavy hydrogen atoms, called deuterons. But the neutron refused to split. (*Nature*, May 8).

Science News Letter, May 29, 1937

SEASICKNESS

Why Bring That Up?

By Dr. Joseph Franklin Montague

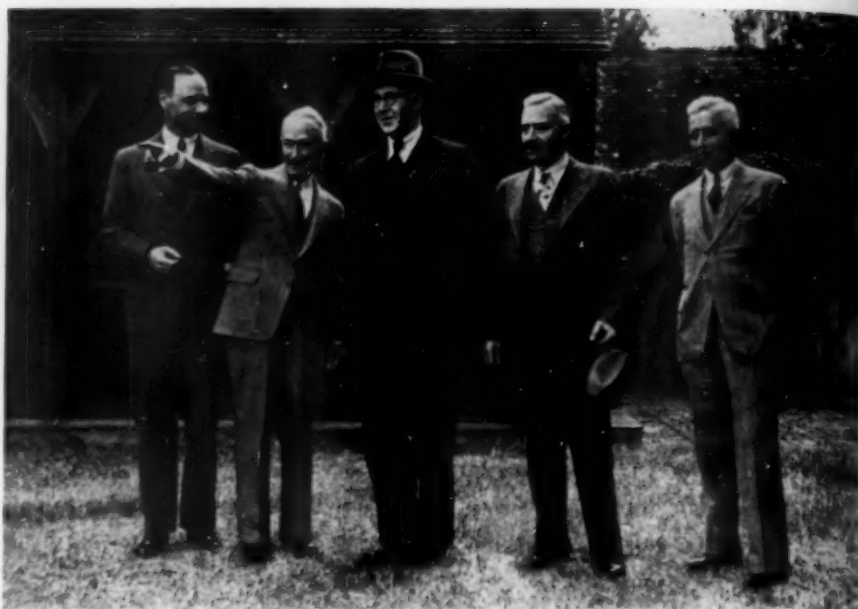
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SEASICKNESS



INSPECT NEW HEALTH CENTER SITE

Surgeon General Thomas Parran and other officials of the U. S. Public Health Service showed Sir Henry Dale, Nobel Prize Winner and director of the British National Institute for Medical Research, the spot near Bethesda, Md., where ground has been broken for the new U. S. National Institute of Research. The plans call for four buildings to house the federal health service's research activities in the fight to protect America from disease. When Sir Henry saw the site and plans he expressed unbounded admiration, tinged with envy, although his own institute is one of the world's outstanding medical research centers. "I wish we had the same thing," he said. Left to right: Prof. Carl Voegtlin, U. S. National Institute of Health; Dr. R. L. Thompson, director, U. S. National Institute of Health; Sir Henry Dale; Surgeon General Parran; Dr. R. E. Dyer, assistant director, U. S. National Institute of Health.

PHYSIOLOGY

British Scientist Describes Chemical Emissary to Muscles

MILLIONS of charges of a chemical, acetylcholine, spurt from nerve endings every time a thought commands a muscle to move, Sir Henry Dale, director of the British National Institute for Medical Research, explained in his first interview in the United States since sharing the Nobel Prize award for this discovery.

Research leading to the discovery was described by Sir Henry before medical audiences in Washington, D. C., Baltimore, and New York.

"When I talk to you," Sir Henry said, "millions of charges of acetylcholine are released to move my tongue and lips."

This same chemical is what causes sweat to stand out on a man's face when he has had a bad fright or other shock, Sir Henry explained. It was formerly thought that this effect was caused

by adrenalin, product of the adrenal glands.

With the exception of the sweat glands, acetylcholine is concerned only with the nerves that control voluntary muscles. It is probably formed at the endings of these nerves. Only an infinitesimal amount is released at each discharge.

Acetylcholine was known to scientists at least 50 years before its important role in the body was discovered. The research leading to this discovery was done partly by Sir Henry and partly by Prof. Otto Loewi at Graz, Austria, who shared with Sir Henry the Nobel Prize in medicine and physiology for 1936.

Practical application of the discovery is already being made in the case of a serious disease of muscle weakness, myasthenia gravis. The defect in this condi-

tion, doctors now know, is due either to too little acetylcholine or a too rapid destruction of it, resulting in inability to use the voluntary muscles. Patients suffering from this disease are now be-

ing helped by a medicine which preserves the acetylcholine from too rapid destruction. It is normally broken down into other chemicals after it has performed its function of nerve messenger.

Science News Letter, May 29, 1937

PHYSICS

Birth Notice of Particle Appears in Physics Journal

NOBEL prize physicist, Dr. Carl D. Anderson of California Institute of Technology, and his colleague, Dr. Seth H. Neddermeyer, have the scientific "birth notice" of their new atomic particle in the *Physical Review* (May 15).

Yet unnamed, the new particle is considered as intermediate in weight between the two simplest particles hitherto known: the electron and the proton. The electron has a negative charge of electricity while the proton has a positive charge of electricity and known to be the nucleus of a hydrogen atom.

A footnote in the scientific report entitled "Note on the Nature of Cosmic-Ray Particles," indicates that the claim

for priority as to who should be the scientific "parents" of the new atomic baby particle was a close race.

Notice is there made that the report of Drs. J. C. Street and E. C. Stevenson of Harvard University at the Washington meeting of the American Physical Society on April 29 gives "excellent experimental evidence showing the existence of particles less massive than protons but more penetrating than electrons. . ."

The Anderson-Neddermeyer paper was submitted for publication just a month earlier, on March 30. (See SNL, May 8)

Science News Letter, May 29, 1937

MEDICINE

Abortions Common Among Women Using Birth Control

RESORT to intentionally induced abortion is much more common among women who practice birth control than it is among women who do not. The abortionist is called upon to rectify the inadequacies of birth control.

Birth control is practiced more widely, although less effectively, in Chicago than in New York City.

These are two facts that Dr. Raymond Pearl, Johns Hopkins University biologist, uncovered in his studies of the reproductive life of some 31,000 women delivered of babies in the hospitals of the East and of the Mississippi Valley.

From this study he makes a report on fertility and on contraception as practiced by New York and Chicago women. (*Journal, American Medical Association*, April 24)

What the biologist calls "reproductive wastage"—those pregnancies that terminate in miscarriages, abortions or stillbirths—constitute an outstanding part of Dr. Pearl's findings.

The 1,328 New York women studied who have experienced two or more pregnancies admit that one in every twenty-four pregnancies they have experienced in their aggregate reproductive lives has been terminated by a successful criminal abortion.

Furthermore, on their own admission,



Doctor Tells How to Make the "Change of Life" A CHANGE FOR THE BETTER—by following a few simple rules.

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approximately one in every eight of them has had at least one induced abortion. Finally they admit that approximately 30 per cent. of the aggregate reproductive wastage they have experienced has been due solely to criminal abortions induced by themselves or by somebody else.

"It is probable that the admitted figures are short of the truth," writes Dr. Pearl.

All of the women studied are living in wedlock, have been married only once and are free from gynecologic disease. In other words, they are not persons of loose morals.

"These are records of families, living together and rearing children, on the whole representative of the most substantial sort of the traditionally typical American family from the 'very poor' through 'well-to-do and rich,'" states Dr. Pearl.

"They are voluntarily taking one of the most serious risks to their very lives as well as to their future health and well-being that a woman can take short of suicide or major self-mutilation."

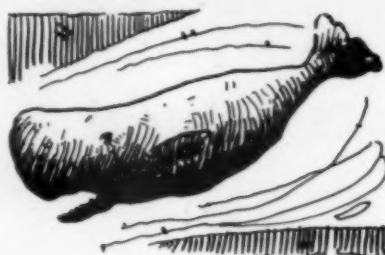
The white women of Chicago appear to be somewhat less fertile on the average than the white women of New York City, whether measured by pregnancies or by live births produced, the study shows.

Among the 3,451 white women studied in Chicago, 64 per cent. have practiced birth control either consistently or irregularly. Of the 3,420 white New Yorkers, 53 per cent. have made attempts at contraception.

As indicated by the average lapse of time between marriages and the beginning of the first pregnancy, contraception as actually practiced is more effective among New York women than among Chicago women.

Attempted contraception was less frequent and less effective among Negroes than among whites in both cities.

Science News Letter, May 29, 1937



Survival of the Fattest

FAT would seem to be par excellence the chosen form for the storage of energy against a time of future need. In the animal kingdom it is ubiquitous: the whale's blubber, the camel's hump, the layers of lard and bacon on the back and sides of the hog.

Man turns this animal storage of fat to his own advantage in many ingenious ways. The whole vast old-time whaling industry was founded principally on the whale's blubber aforementioned; the even vaster meat-packing industry of today rides on the backs of fat hogs, fat cattle, fat sheep. Savages burn the dried bodies of "oil-birds" as torches. The poor penned geese of Strasbourg are forced to be gourmands so that men may be gourmets, savoring the fatty delicacy of *pâté de foies gras*.

To be sure, animals do not store all their reserve energy-food as fat. Principally in the liver a unique carbohydrate, glycogen, is laid up. This apparently converts into the ultimate muscle-food, dextrose, more readily than the more complex fat. It is the little heap of broken coal right down in front of the bunker, easiest to shovel into the furnace when needed. But it is worth noting that the

liver is also one of the prime storage-places for fat, as witness the liver oils of cod and other kinds of fish.

Fats and oils, by the way, have no sharp boundary between them. A fat is a solid oil; an oil is a liquid fat.

Plants as well as animals store a good deal of fatty-oily reserve food, although they tend to favor carbohydrates in far greater volume than animals. This may possibly be a consequence of the plant's sessile life; rooted fast in one place, it does not find the bulkier starches and sugars the handicap they would be to the actively motile animal.

Certainly it is worthy of note that in the very parts of plants that are likely to travel, that is, the seeds and other propagating bodies, one is most likely to find stored fatty foodstuff. Not only that, but if a seed has both starch and oil, the droplet of oil is nearest the folded-up embryo plant within the seed. Corn, wheat and other grains offer good examples on this point.

In oilier seeds, such as cottonseed, linseed, cacao beans, castor beans, coconuts—indeed nuts of all kinds—the stored oil may be more widely distributed. Some plants even endow the flesh of the fruit with oil, as witness the olive of the Old World and the avocado of the New.

Science News Letter, May 29, 1937

BIOLOGY—PSYCHOLOGY

Twins Don't Stay Alike If They Don't Stay Together

TWINS don't stay alike if they don't stay together. This is the general conclusion derived from a study of many pairs of twins, both identical and non-identical, by a three-man research team at the University of Chicago, representing the sciences of biology, psychology, and statistics.

Some of the twins had been reared together, others had been separated in infancy by various chances of life, and brought up apart. It was found that if the two members of a pair of identical twins grew up in strongly different social and educational surroundings, they "grew apart" as the years went on, and came to be quite unlike each other.

The three Chicago researchers are Profs. Horatio H. Newman, Frank N. Freeman, and Karl J. Holzinger. Their results are published in book form by the University of Chicago Press.

Science News Letter, May 29, 1937

Diabetes is increasing throughout the world, but is more prevalent in the United States than anywhere else.

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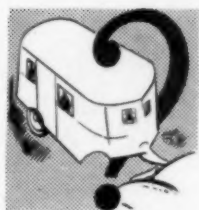
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WHICH MAKES OF TRAILERS AND WASHING MACHINES ARE *Best Buys?*

**Avoid Mistakes
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Technical Experts Now Give You the
Names of Good Products and of Poor
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Substantial Sums on Your Purchases

What makes of trailers show the best engineering construction? Which are rated as "Best Buys" on basis of quality and price? What effect does towing a trailer have on the durability of the towing car? On the gasoline mileage? On the driving habits of the driver? What are the advantages and disadvantages of trailers in terms of living comfort? What legal restrictions do some states impose on the use of trailers?



What three models of washing machines, out of ten models tested by engineers, were rated as "Best Buys"? What three models as "Not Acceptable"? Which model had the greatest washing effectiveness? Which one was dropped out of a durability test after three gears had failed?



What is the nature and what are the causes of constipation? What are the best means of avoiding and treating it? Which laxatives are effective and which are not? Which may be taken safely . . . and which may not?

What are the best methods and materials to use in protecting your clothes from moths? Will any of the advertised moth preventives really protect your clothes? What product advertised as a moth preventive was described as " . . . worthless for the control of moths" by the U. S. Food & Drug Administration?

The Answers

to this and similar questions are given in reports and articles in the current issue of *Consumers Union Reports*, the monthly publication which goes to members of Consumers Union of United States and which rates products, by brand name, as "Best Buys," "Also Acceptable," and "Not Acceptable."

In addition to reports on trailers, washing machines and moth preventives, and the article on constipation, this issue also contains ratings of garden insecticides, and other products. The article on constipation in this issue is the first of a series on this subject. Prepared by a physician, these articles define the nature and causes of this ailment and the methods of treatment for it. The merits and demerits of widely-advertised laxatives will be discussed in detail.

Consumers Union Reports

is not just a magazine, nor is Consumers Union a commercial organization. Established on a strictly non-profit, membership basis, Consumers Union is set up to provide nearly 40,000 members with accurate, technical information on the things they buy. Each month, in the 32-page *Consumers Union Reports*, members of Consumers Union receive unbiased, usable information to guide them in their daily buying—information based on laboratory analyses, technical tests, and actual trials of the products reported upon, with ratings, in terms of brand names, as "Best Buys," "Also Acceptable," and "Not Acceptable." Information is also given on the labor conditions under which many products are made. Properly used, the information contained in *Consumers Union Reports* can save the average family \$100 or more in the course of a year.

The coupon below is your invitation to become a member of this unique and rapidly growing organization. The membership fee is \$3.00 a year (\$1 for an abridged edition covering only the less expensive products). It brings you (1) 12 issues of *Consumers Union Reports*; (2) a 240-page yearly Buying Guide (the 1937 edition of which has just been distributed to members), and (3) a vote in the control of the organization. Mail this coupon today. Your membership can begin with any of the issues listed at the right.

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 - () DEC.—Vacuum Cleaners, Fountain Pens, Electric Irons, Blankets, Nose Drops
 - () JAN.-FEB.—Men's Suits, Cold Remedies, Shaving Creams, Children's Undergarments
 - () MAR.—1937 Autos, Face Powders, Sheets, Flour, Canned Foods
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Cereals	and Socks	Tires
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•First Glances at New Books

Adventure

PIRATE TREASURE—Harold T. Wilkins—*Dutton*, 409 p., illus., \$3. Treasure tales the world over have been gathered into this romantic history. The author does not limit himself very closely to pirate hoards, but includes modern wrecks that have carried down rich cargoes, treasure tombs, and lost gold mines.

Science News Letter, May 29, 1937

Child Training

LET'S PLAY A GAME, AND OTHER TALES—Betty Lawrence—*Christopher*, 44 p., \$1.25. Although the style of this book seems intended to appeal to juvenile readers, the ideas, such as "washing up," seem to be of much more interest to mothers.

Science News Letter, May 29, 1937

Biochemistry

THE METABOLISM OF LIVING TISSUES—Eric Holmes—*Cambridge (Macmillan)*, 235 p., \$2.25. Designed to give students of biochemistry a biological view of their field.

Science News Letter, May 29, 1937

Psychology

ABNORMAL PERSONALITY AND TIME—Nathan Israeli—*Science Press*, 123 p., \$2.50. The report of a study carried out under a Social Science Research Council fellowship. The failure of mental patients to orient themselves in time, and the peculiar ideas of some patients concerning time, provide an interesting subject for study.

Science News Letter, May 29, 1937

Political Science

KNOW YOUR CONSTITUTION—Charles R. Richardson and Marjorie G. Spaulding—*Richardson & Spaulding*, 3545 Colfax Ave., S. Minneapolis, Minn., 55 p., 40 c, 10 or more copies, ea. 35 c. The text of the Constitution is followed by questions and answers on it.

Science News Letter, May 29, 1937

Psychology

CONTROLLING HUMAN BEHAVIOR, A FIRST BOOK IN PSYCHOLOGY FOR COLLEGE STUDENTS—Daniel Starch, Hazel M. Stanton, and Wilhelmine Koerth, assisted by Roger A. Barton—*Macmillan*, 638 p., \$2.90. The title well describes this text-book on applications of psychology, intended for beginning college students and other interested readers.

Science News Letter, May 29, 1937

Travel

YOUTH HOSTEL HANDBOOK, 1936—*American Youth Hostels, Inc.*, 96 p., il-

lus., 25c. Youth hostels are familiar institutions in Europe. The map in this handbook shows that they are also well scattered over the New England states. When the wanderlust strikes American boys and girls next summer they can be sure of overnight care and welcome at these camps or dwellings.

Science News Letter, May 29, 1937

Electrophysiology

ELECTRICAL SIGNS OF NERVOUS ACTIVITY—Joseph Erlanger and Herbert S. Gasser—*Univ. of Penna.*, 221 p., illus., \$3.50. While the subject of this important book has recently awakened much popular interest, this particular presentation is for scientists and would prove too technical for the average lay reader.

Science News Letter, May 29, 1937

Education

THE TEACHER AND SCHOOL ORGANIZATION—Leo M. Chamberlain—*Prentice-Hall*, 656 p., \$2.80. The Director of the Bureau of School Service, University of Kentucky, contributes this textbook designed particularly for use in teacher training institutions.

Science News Letter, May 29, 1937

Zoology

ANIMAL BIOLOGY (rev. ed.)—Michael F. Guyer—*Harper*, 735 p., illus., \$3.75. A revision of a successful textbook by one of America's best known biologists.

Science News Letter, May 29, 1937

Geology—Bibliography

COMPREHENSIVE INDEX OF THE PUBLICATIONS OF THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, 1917-1936—Daisy Winifred Heath—*Amer. Assoc. Petroleum Geologists*, 382 p., \$2 to members and associates, \$3 to others.

Science News Letter, May 29, 1937

Biology

EXPLORATIONS IN BIOLOGICAL SCIENCE—James C. Adell, Orra Olive Dunham and Louis E. Welton—*Ginn*, 345 p., illus., \$1.12. An illustrated work-book, with questions.

Science News Letter, May 29, 1937

Typography

TYPING ACADEMIC PAPERS: A MANUAL AND A MODEL FOR THE TYPIST AND AUTHOR—W. K. Cunningham, Jr. and Ben M. Patrick—*Edwards Bros.*, 124 p., \$1.30. Recommended for study by scientists and their secretaries as a means of improving the readability and efficiency of scientific literature.

Science News Letter, May 29, 1937

Ethnology

CIVILIZATION—As told to Florence Drake by Thomas Wildcat Alford—*University of Oklahoma Press*, 203 p., illus., \$2.50. The great grandson of the famous chief Tecumseh tells his experience in changing from Indian tribal life to modern civilization. His reminiscences of Indian ways and his intelligent attitude toward the white man's progress show a phase of modern America that most people know little about—what an Indian thinks of civilization.

Science News Letter, May 29, 1937

Biology

TWINS: A STUDY OF HEREDITY AND ENVIRONMENT—Horatio H. Newman, Frank N. Freeman and Karl J. Holzinger—*Univ. of Chicago*, 369 p., illus., \$4. See page 350.

Science News Letter, May 29, 1937

Biology

GENERAL BIOLOGY—Leslie A. Kenoyer and Henry N. Goddard—*Harper*, 630 p., illus., \$3.50. A textbook suitable for a full-year course in general biology in colleges. The general order of treatment is, first, function, then form and classification, then evolution and environmental relations. The illustrations are well-chosen and clean-cut.

Science News Letter, May 29, 1937

Biology

AN INTRODUCTION TO COMPARATIVE BIOCHEMISTRY—Ernest Baldwin—*Cambridge (Macmillan)*, 112 p., \$1.50. A condensed treatment, but adequate for the purpose intended. Particular attention is given to biochemical and biophysical relations to environment as expressed through water, to the nitrogen cycle, to respiration, and to the pigments.

Science News Letter, May 29, 1937

Library Science—Entomology

INSECT ENEMIES OF BOOKS—Harry B. Weiss and Ralph H. Carruthers—*New York Public Library*, 63 p., 30 c. A discussion of the insects which injure books, and methods of control. An extensive bibliography of thirty-eight pages completes the book.

Science News Letter, May 29, 1937

Ornithology

LIFE HISTORIES OF NORTH AMERICAN BIRDS OF PREY. Order Falconiformes (Part 1)—Arthur Cleveland Bent—*Govt. Print. Off.*, 409 p., 102 plates, 70 c. See page 344.

Science News Letter, May 29, 1937